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CHARPY TOUGHNESS BEHAVIOR OF CONTINUOUS PALF FIBERS REINFORCED EPOXY MATRIX COMPOSITES

Glória, G.O.(1); Altoé, G.R.(2); Gomes, M.(3); Teles, M.C.A.(1); Muylaert, F.M.(4); Vieira, C.F.(1); Monteiro, S.N.(5); De Moraes, Y.M.(1);
Universidade Estadual do Norte Fluminense(1); Pontifícia Universidade Católica do Rio de Janeiro(2); Instituro Federal Fluminense(3); Universidade Estadual do Norte Fluminense Darcy Ribeiro(4); Faculdade Redentor(5); Universidade Estadual do Norte Fluminense Darcy Ribeiro(6); Instituto Militar de Engenharia(7); Universidade Estadual do Norte Fluminense Darcy Ribeiro(8);

Nowadays the society is demanding for materials that are environmentally friendly. The natural fibers, like PALF, appears like an option to substitute the synthetic ones. Besides the environmental benefits the natural fibers show economical and some properties advantages like the low density in comparison with synthetic fibers. The natural fibers are used at automobile industry, aerospacial parts and defense components. The objective of this work was to analyze the absorbed impact energy of the composites reinforced with PALF fibers. Specimens were fabricated with up to 30% in volume of PALF fibers aligned along the specimens' length in a polymeric matrix. The fibers were press molded with a epoxy resin mixed with a hardener for 24 hours to cure at room temperature, around 25ºC, into a steel mold pressure under 1 ton. The specimens with dimensions are 12.7x125x10 mm, with 15 for each volume fraction of fiber were tested in a Charpy pendulum hammer. The results showed a bigger absorved impact energy with increase of the amount of fibers, 903.75 J/m to the specimens with 30% of volume fraction, more than 39 times than the pure epoxy 22,9 J/m. The better result can be explained by the difficult of rupture imposed by the fibers and the kind of crack resulting from fiber/matrix interaction.